

CLAIMS

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A method for constructing a wired-AND bus system, comprising:

- (a) constructing a plurality of wired-AND bus segments, each bus segment having being small enough to avoid rise time problems;
- (b) connecting pairs of bus segments together with bus bridges wherein each bus bridge selectively forwards transactions and commands from one bus segment to another; and
- (c) connecting master devices and slave devices to the bus segments.

1 2. The method of claim 1 wherein each bridge comprises an address bitmap and
2 wherein the bridge selectively forwards transactions based on information in the
3 address bitmap.

1 3. The method of claim 1 wherein each bridge comprises a pair of range registers
2 wherein values in the range registers determine which commands will be
3 forwarded by the bridge.

1 4. The method of claim 1 wherein step (b) comprises connecting the bus segments
2 into a tree hierarchy.

1 5. The method of claim 1 further comprising:

- 2 (d) programming one bus master to enter information into the address
3 bitmaps and range registers of each bridge.

1 6. The method of claim 5 wherein the bus segments are connected into a tree
2 hierarchy having a root level and the method comprises:

- 3 (e) locating the one bus master at the root level.

- 1 7. The method of claim 1 wherein at least some of the bridges are bi-directional
2 bridges.
- 1 8. The method of claim 7 wherein each bi-directional bridge is comprised of two
2 unidirectional bridges, each having a bridge ID.
- 1 9. The method of claim 8 wherein each unidirectional bridge has a different bridge
2 ID.
- 1 10. The method of claim 1 wherein at least two slave devices have the same address
2 and the method further comprises:
3 (f) sending a tunnel command from a bus master, the tunnel command
4 containing data and a slave device address, to one of the bridges
5 whereupon the bridge forwards the data to the slave device address.
- 1 11. Apparatus for constructing a wired-AND bus system, comprising:
2 a plurality of wired-AND bus segments, each bus segment having being
3 small enough to avoid rise time problems;
4 bus bridges connecting pairs of bus segments together wherein each bus
5 bridge selectively forwards transactions and commands from one bus segment to
6 another; and
7 at least one master device and at least one slave device connected to the
8 bus segments.
- 1 12. The apparatus of claim 11 wherein each bridge comprises an address bitmap
2 and wherein the bridge selectively forwards transactions based on information in
3 the address bitmap.

- 1 13. The apparatus of claim 11 wherein each bridge comprises a pair of range
2 registers wherein values in the range registers determine which commands will
3 be forwarded by the bridge.
- 1 14. The apparatus of claim 11 wherein the bus bridges connect the bus segments
2 into a tree hierarchy.
- 1 15. The apparatus of claim 11 further comprising a configuration host that enters
2 information into the address bitmaps and range registers of each bridge.
- 1 16. The apparatus of claim 15 wherein the bus segments are connected into a tree
2 hierarchy having a root level and the configuration host is located at the root
3 level.
- 1 17. The apparatus of claim 11 wherein at least some of the bridges are bi-directional
2 bridges.
- 1 18. The apparatus of claim 17 wherein each bi-directional bridge is comprised of two
2 unidirectional bridges, each having a bridge ID.
- 1 19. The apparatus of claim 18 wherein each unidirectional bridge has a different
2 bridge ID.
- 1 20. The apparatus of claim 11 wherein at least two slave devices have the same
2 address and the apparatus further comprises a bus master that sends a tunnel
3 command containing data and a slave device address to one of the bridges
4 whereupon the bridge forwards the data to the slave device address.